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EXAMINER	
SAEED, USMAAN	

ART UNIT	PAPER NUMBER
2166	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/617,901	DUNKLE, MARK VANDEVERT	
	Examiner	Art Unit	
	USMAAN SAEED	2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/30/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-6,8,9,15,17,18,21,25-27,29,30,36 and 44-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-6,8,9,15,17,18,21,25-27,29,30,36 and 44-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Receipt of Applicant's Amendment, filed 9/30/2008 is acknowledged.

Claims 1, 21, and 44 have been amended, and no claims have been cancelled. Claims 1, 4-6, 8, 9, 15, 17, 18, 21, 25-27, 29, 30, 36 and 44-54 are pending in this office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4-5, 15, 44, 46-50 and 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Guillermo Rudolfo Chacon** (**Chacon** hereinafter) (U.S. Patent No. 6,128,588), in view of **Floyd et al.** (**Floyd** hereinafter) (U.S. PG Pub No 2002/0105355).

With respect to claim 1, **Chacon** teaches **a method of storing information in a database to characterize attributes outputted by different classes of equipment, comprising the steps of:**

"providing a database memory device" as auto scheduling system 22 includes scheduler database 30 (**Chacon** Col 2, Lines 64-65).

"storing in a first database table of the database memory device a plurality of attribute data records, wherein the step of storing each attribute data record includes" as scheduler database 30 stores production models for simulation as well as data extracted from the manufacturing execution system 20 to be used for the simulation. The stored information includes T1 and T2 parameters, lot status, machine tact (time standard), and Kanban worksheets (**Chacon** Col 2, Lines 66-67 & Col 3, Lines 1-4).

"wherein at least one class of equipment is manufacturing equipment having a plurality of signal lines for outputting attribute data" and "wherein the ID identifies a first one of the plurality of signal lines" as (**Floyd** Paragraph 0145, 0148, 0090 and Abstract and figures 4-5). Figure shows the equipments 25 connected to general purpose interface bus GPIB. This GPIB has plurality of signal lines to route test signals, commands and measurements. These test signals and commands also includes equipment brand and type ID's.

"storing in that record a first field identifying a class of equipment" as there may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record.

"storing in that record a second field identifying an attribute whose value is outputted by the class of equipment identified by the first field of that record, wherein said attribute is a sensor measurement or operating parameter of said class of

equipment identified by said first field" as according to the present invention, a method and system for creating customized machine tact information includes defining time standards as a function of process parameter and equipment parameters. For example, if a process parameter such as temperature, pressure, etc. and an equipment parameter such as equipment brand name, model, etc (**Chacon** Col 2, Lines 24-29). The machine tact information is created by accessing and using the stnfamdef table, which contains equipment type records defines/outputs the attributes/parameters. Examiner interprets temperature and pressure as a sensor measurement.

"storing in that record a third field specifying an ID which the class of equipment identified by the first field of that record assigns to the attribute value identified by the second field of that record" as the rules accumulate counters for the stn (equipment identification) which are then checked against the PM limit table for that equipment ID (**Chacon** Col 30, Lines 35-37). The device name will be a concatenation of the part ID and primary procedure ID. There is an explicit field for primary procedure ID (**Chacon** Col 18, Lines 35-38). The counters for equipment identification are checking the table for the equipment ID and the equipment ID is linked/assigned to the process.

Chacon teaches the elements of claim 1 as noted above but does not explicitly teaches **"an attribute whose value is outputted by the class of equipment identified by the first field of that record," "storing in a second database table that is a child table of the first database table a plurality of subordinate data records, wherein storing each subordinate data record includes: storing in the subordinate data record one or more subordinate fields that are subordinate to the second field of an attribute data record"**

and "define communications interface specifications that enable a diagnostic apparatus to retrieve distinct attribute information from distinct classes of equipment."

However, **Floyd** teaches **"an attribute whose value is outputted by the class of equipment identified by the first field of that record"** as a test signal is split and supplied to multiple modules. Passive testing may be performed by monitoring parameters of the module while the test signal is supplied to the module. Active testing may be a functional test of the module in which the test signal is supplied to, processed by, and output from the module. Such test signals output from the modules are switched to the test equipment on a time-share basis. In this way, the number or expensive test equipment set-ups may reduced. The controller for each virtual oven also generates displays so that a user can track the test progress of all modules within the virtual oven. The controller also builds a database of the active and passive tests for each module (**Floyd** Abstract).

"storing in a second database table that is a child table of the first database table a plurality of subordinate data records, wherein storing each subordinate data record includes: storing in the subordinate data record one or more subordinate fields that are subordinate to the second field of an attribute data record" as the *equipment table 520* may include the following data entities: a *equipment brand data entity 522, equipment type data entity 524 (optional particularly if the each brand has only one type), and the equipment usage data entity 526* each of which may include *fields for ID, name and description* (e.g. brand data entity 522 has an equipment brand ID which may be used as a key, equipment brand name and equipment brand description fields). Equipment brand entity 522 is associated with equipment type data entity 524 in order to positively identify the equipment.

The usage data entity 526 keeps track of how much each piece of equipment is used and may also track which operator used the equipment, when, for how long, etc. Such usage information is quite helpful in, for example, knowing when a calibration or other service is due and to determine operator performance (**Floyd** Paragraph 0146). These lines teach that equipment table 520 includes fields and sub-fields which examiner interprets as subordinate fields containing data records.

"define communications interface specifications that enable a diagnostic apparatus to retrieve distinct attribute information from distinct classes of equipment" as the equipment command & communication table 500 permits the AMS controller 100 to send commands to, receive data from and otherwise communicate with various different types of test and communication equipment including the variety of test equipment 25 and the respective communication interface equipment (e.g. the communication server 55, Ethernet box 70, etc.). Each type of test and communication equipment may expect a different protocol, command, syntax, line rate, etc depending upon the equipment brand, model, release, etc. One of the key advantages of the inventive system is the ability to easily communicate with any such equipment and the database 400 facilitates such communication by providing the appropriate protocols, syntax, commands, etc for the particular type of equipment being utilized (**Floyd** Paragraph 0143).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Floyd's** teaching would have allowed **Chacon** to provide a corresponding gross reduction in chamber throughput and

efficiency and to permit asynchronous loading and test starting of an arbitrary number of modules.

Claim 44 is essentially the same as claim 1 except it sets forth the claimed invention as a data storage medium and is rejected for the same reasons as applied hereinabove.

With respect to claim 4, **Chacon** teaches **"wherein, for each attribute data record, the ID stored in the third field uniquely specifies a command such that, in response to the class of equipment stored in the first field receiving said command, said class of equipment outputs the attributes stored in the second field"** as the rules accumulate counters for the stn (equipment identification) which are then checked against the PM limit table for that equipment ID (**Chacon** Col 30, Lines 35-37). According to the present invention, a method and system for creating customized machine tact information includes defining time standards as a function of process parameter and equipment parameters. For example, if a process parameter such as temperature, pressure, etc. and an equipment parameter such as equipment brand name, model, etc (**Chacon** Col 2, Lines 24-29). The equipment has an ID and the equipment and the ID are specifying the process and equipment parameters/attributes such as temperature and pressure.

With respect to claim 5, **Chacon** teaches **the method of claim 1, wherein, for at least one attribute data record, the step of storing the second field further includes the step of:**

"storing a fourth field identifying a position of a chamber connected to the class of equipment identified in the first field" as (**Chacon** Col 31, Lines 1-20). This table teaches us that the PCounter "arg" contains the position of the chambers connected, which is 1-3.

With respect to claim 15, **Chacon** teaches **"the method of claim 1, wherein, for at least one of the attribute data records, the attribute identified in the step of storing the first second field is a measurement of a process being performed in a semiconductor fabrication process chamber and an operating condition of a process being performed in a semiconductor fabrication process chamber"** as wafer fabrication, for example, involves complex dynamic production systems. The measurement of their capacity and performance such as lead-time and wafer output are not accurate enough if a solution capable of modeling the dynamic fabrication conditions and variance in the system is not used (**Chacon** Col 1, Lines 47-52).

The present invention relates to an integrated characterization and scheduling system for fabrication production systems such as wafer fabrication. In particular, the present invention is directed to a machine tact (time standard) modeling system for use with a manufacturing execution system. According to the present invention, a method and system for creating customized machine tact information includes defining time standards as a function of process parameter and equipment parameters. For example, if a process parameter such as temperature, pressure, etc. and an equipment parameter such as equipment brand name, model, etc. are entered, the system creates and suggests the time standard to use for those

times that are not likely to have large variations (**Chacon** Col 2, Lines 17-31). Examiner interprets the temperature and pressure as an operating condition.

With respect to claim 46, **Chacon** teaches **the method of claim 1, further comprising the steps of:**

"identifying a first class of equipment to which the first manufacturing equipment belongs" as there may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record. The equipment type is interpreted as a class of equipment.

"retrieving from the first database table one of said attribute data records and from the second database table one of said subordinate data records such that the first, second and third fields of the retrieved attribute data record respectively identify: (i) said first class of equipment, (ii) a first attribute, and (iii) a first ID" as auto scheduling system 22 includes scheduler database 30 (**Chacon** Col 2, Lines 64-65). There may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record. The equipment type is interpreted as a class of equipment.

According to the present invention, a method and system for creating customized machine tact information includes defining time standards as a function of process parameter and equipment parameters. For example, if a process parameter such as temperature, pressure, etc. and an equipment parameter such as equipment brand name, model, etc (**Chacon** Col 2, Lines 24-29). The machine tact information is created by accessing and using the stnfamdef table, which contains equipment type records defines/outputs the attributes/parameters. Examiner interprets temperature and pressure as a sensor measurement. The rules accumulate counters for the stn (equipment identification), which are then checked against the PM limit table for that equipment ID (**Chacon** Col 30, Lines 35-37). The counters for equipment identification are checking the table for the equipment ID and the equipment ID is linked/assigned to the process.

"using the first ID to retrieve a value of the first attribute from the first manufacturing equipment" as figure 5 (Chacon Figure 5).

Chacon teaches the elements of claim 46 as noted above but does not explicitly discloses **"providing a first manufacturing equipment."**

However, **Floyd** discloses, **"providing a first manufacturing equipment"** as (**Floyd** Paragraph 0145).

Floyd, further discloses **"subordinate data records"** as the *equipment table 520* may include the following data entities: a *equipment brand data entity 522, equipment type data entity 524 (optional particularly if the each brand has only one type), and the equipment usage data entity 526* each of which may include *fields for ID, name and description* (e.g. brand data entity 522 has an equipment brand ID which may be used as a key, equipment brand name

and equipment brand description fields). Equipment brand entity 522 is associated with equipment type data entity 524 in order to positively identify the equipment. The usage data entity 526 keeps track of how much each piece of equipment is used and may also track which operator used the equipment, when, for how long, etc. Such usage information is quite helpful in, for example, knowing when a calibration or other service is due and to determine operator performance (**Floyd** Paragraph 0146). These lines teach that equipment table 520 includes fields and sub-fields which examiner interprets as subordinate fields containing data records.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Floyd's** teaching would have allowed **Chacon** to provide a corresponding gross reduction in chamber throughput and efficiency and to permit asynchronous loading and test starting of an arbitrary number of modules.

With respect to claim 47, **Chacon** teaches **the method of claim 4, further comprising the steps of:**

"identifying a first class of equipment to which the first manufacturing equipment belongs" as there may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record. The equipment type is interpreted as a class of equipment.

"retrieving from the database memory device one of said attribute data records and one of said subordinate data records such that the first, second and third fields of the retrieved attribute data record respectively identify: (i) said first class of equipment, (ii) a first attribute, and (iii) a first command" as auto scheduling system 22 includes scheduler database 30 (**Chacon** Col 2, Lines 64-65). There may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record. The equipment type is interpreted as a class of equipment.

According to the present invention, a method and system for creating customized machine tact information includes defining time standards as a function of process parameter and equipment parameters. For example, if a process parameter such as temperature, pressure, etc. and an equipment parameter such as equipment brand name, model, etc (**Chacon** Col 2, Lines 24-29). The machine tact information is created by accessing and using the stnfamdef table, which contains equipment type records defines/outputs the attributes/parameters. Examiner interprets temperature and pressure as a sensor measurement.

The rules accumulate counters for the stn (equipment identification), which are then checked against the PM limit table for that equipment ID (**Chacon** Col 30, Lines 35-37).

"sending the first command to the first manufacturing equipment" as figure 5 (Chacon Figure 5).

"wherein the first manufacturing equipment outputs a value of the first attribute in response to said step of sending the first command" as figure 5 (Chacon Figure 5). Examiner interprets entering of equipment ID as a first command.

Chacon teaches the elements of claim 47 as noted above but does not explicitly discloses **"providing a first manufacturing equipment" "sending the first command to the first manufacturing equipment" and "wherein the first manufacturing equipment outputs a value of the first attribute in response to said step of sending the first command."**

However, **Floyd** discloses **"providing a first manufacturing equipment" "sending the first command to the first manufacturing equipment" and "wherein the first manufacturing equipment outputs a value of the first attribute in response to said step of sending the first command"** as (**Floyd** Paragraph 0145, and 0148).

Floyd, further discloses **"subordinate data records"** as the *equipment table 520* may include the following data entities: a *equipment brand data entity 522, equipment type data entity 524 (optional particularly if the each brand has only one type), and the equipment usage data entity 526* each of which may include *fields for ID, name and description* (e.g. brand data entity 522 has an equipment brand ID which may be used as a key, equipment brand name and equipment brand description fields). Equipment brand entity 522 is associated with equipment type data entity 524 in order to positively identify the equipment. The usage data entity 526 keeps track of how much each piece of equipment is used and may also track which operator used the equipment, when, for how long, etc. Such usage information is quite helpful in, for example, knowing when a calibration or other service is due and to determine operator

performance (**Floyd** Paragraph 0146). These lines teach that equipment table 520 includes fields and sub-fields which examiner interprets as subordinate fields containing data records.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Floyd's** teaching would have allowed **Chacon** to provide a corresponding gross reduction in chamber throughput and efficiency and to permit asynchronous loading and test starting of an arbitrary number of modules.

With respect to claim 48, **Chacon** discloses **the method of claim 1, further comprising the steps of:**

"identifying a first class of equipment to which the first manufacturing equipment belongs" as there may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record. The equipment type is interpreted as a class of equipment.

"retrieving from the database memory device one of said attribute data records and one of said subordinate data records such that the first, second and third fields of the retrieved attribute data record respectively identify: (i) said first class of equipment, (ii) a first attribute, and (iii) a first ID that identifies a first one of said signal lines" as auto scheduling system 22 includes scheduler database 30 (**Chacon** Col 2, Lines 64-65).

There may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record. The equipment type is interpreted as a class of equipment.

According to the present invention, a method and system for creating customized machine tact information includes defining time standards as a function of process parameter and equipment parameters. For example, if a process parameter such as temperature, pressure, etc. and an equipment parameter such as equipment brand name, model, etc (**Chacon** Col 2, Lines 24-29). The machine tact information is created by accessing and using the stnfamdef table, which contains equipment type records defines/outputs the attributes/parameters. Examiner interprets temperature and pressure as a sensor measurement.

The rules accumulate counters for the stn (equipment identification), which are then checked against the PM limit table for that equipment ID (**Chacon** Col 30, Lines 35-37).

Chacon teaches the elements of claim 48 as noted above but does not explicitly discloses **"providing a first manufacturing equipment having a plurality of signal lines for outputting attribute data" and "receiving a value of the first attribute from the first signal line."**

However, **Floyd** discloses **"providing a first manufacturing equipment having a plurality of signal lines for outputting attribute data" and "receiving a value of the first attribute from the first signal line"** as (**Floyd** Paragraph 0145, 0148, 0090 and Abstract).

Floyd, further discloses **"subordinate data records"** as the *equipment table 520* may include the following data entities: a *equipment brand data entity 522, equipment type data entity 524 (optional particularly if the each brand has only one type), and the equipment usage data entity 526* each of which may include *fields for ID, name and description* (e.g. brand data entity 522 has an equipment brand ID which may be used as a key, equipment brand name and equipment brand description fields). Equipment brand entity 522 is associated with equipment type data entity 524 in order to positively identify the equipment. The usage data entity 526 keeps track of how much each piece of equipment is used and may also track which operator used the equipment, when, for how long, etc. Such usage information is quite helpful in, for example, knowing when a calibration or other service is due and to determine operator performance (**Floyd** Paragraph 0146). These lines teach that equipment table 520 includes fields and sub-fields which examiner interprets as subordinate fields containing data records.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Floyd's** teaching would have allowed **Chacon** to provide a corresponding gross reduction in chamber throughput and efficiency and to permit asynchronous loading and test starting of an arbitrary number of modules.

With respect to claim 49, **Chacon** teaches **the method of claim 1, further comprising the steps of:**

"identifying a first class of equipment to which the first manufacturing equipment belongs" as there may be a number of different algorithms in use depending on the type of

equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record. The equipment type is interpreted as a class of equipment.

"retrieving from the database memory device one of said attribute data records and one of said subordinate data records such that the first, second and third fields of the retrieved attribute data record respectively identify: (i) said first class of equipment, (ii) a first attribute, and (iii) a first ID that identifies a first address transmitted by the first manufacturing equipment when it transmits the first attribute" as auto scheduling system 22 includes scheduler database 30 (**Chacon** Col 2, Lines 64-65). There may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record. The equipment type is interpreted as a class of equipment.

According to the present invention, a method and system for creating customized machine tact information includes defining time standards as a function of process parameter and equipment parameters. For example, if a process parameter such as temperature, pressure, etc. and an equipment parameter such as equipment brand name, model, etc (**Chacon** Col 2, Lines 24-29). The machine tact information is created by accessing and using the stnfamdef table, which contains equipment type records defines/outputs the

attributes/parameters. Examiner interprets temperature and pressure as a sensor measurement.

The rules accumulate counters for the stn (equipment identification), which are then checked against the PM limit table for that equipment ID (**Chacon** Col 30, Lines 35-37).

Chacon teaches the elements of claim 49 as noted above but does not explicitly discloses **"providing a first manufacturing equipment having a plurality of signal lines for outputting attribute data," "receiving attribute data from the first manufacturing equipment" and "using the first ID to locate a value of the first attribute within the attribute data received in the receiving step."**

However, **Floyd** discloses **"providing a first manufacturing equipment having a plurality of signal lines for outputting attribute data," "receiving attribute data from the first manufacturing equipment" and "using the first ID to locate a value of the first attribute within the attribute data received in the receiving step"** as (**Floyd** Paragraph 0145, 0148, 0090 and Abstract).

Floyd, further discloses **"subordinate data records"** as the *equipment table 520* may include the following data entities: a *equipment brand data entity 522, equipment type data entity 524 (optional particularly if the each brand has only one type), and the equipment usage data entity 526* each of which may include *fields for ID, name and description* (e.g. brand data entity 522 has an equipment brand ID which may be used as a key, equipment brand name and equipment brand description fields). Equipment brand entity 522 is associated with equipment type data entity 524 in order to positively identify the equipment. The usage data entity 526 keeps track of how much each piece of equipment is used and may also track which

operator used the equipment, when, for how long, etc. Such usage information is quite helpful in, for example, knowing when a calibration or other service is due and to determine operator performance (**Floyd** Paragraph 0146). These lines teach that equipment table 520 includes fields and sub-fields which examiner interprets as subordinate fields containing data records.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Floyd's** teaching would have allowed **Chacon** to provide a corresponding gross reduction in chamber throughput and efficiency and to permit asynchronous loading and test starting of an arbitrary number of modules.

Claim 50 is essentially the same as claim 49 except it recites using offsets instead of ID's and is rejected for the same reasons as applied hereinabove. Chacon teaches offsets in figure 5.

With respect to claim 53, **Chacon** does not explicitly teaches **"a first attribute data record includes storing first values of the first field, second field, third field and one or more subordinate fields that enable the diagnostic apparatus to communicate with a first class of equipment via a command-driven protocol" and "storing a second attribute data record includes storing second values of the first field, second field, third field and one or more subordinate fields that enable the diagnostic apparatus to communicate with a second class of equipment via a continuous streaming protocol."**

However, **Floyd** disclose **"a first attribute data record includes storing first values of the first field, second field, third field and one or more subordinate fields that enable the diagnostic apparatus to communicate with a first class of equipment via a command-driven protocol" and "storing a second attribute data record includes storing second values of the first field, second field, third field and one or more subordinate fields that enable the diagnostic apparatus to communicate with a second class of equipment via a continuous streaming protocol"** as the equipment command & communication table 500 permits the AMS controller 100 to send commands to, receive data from and otherwise communicate with various different types of test and communication equipment including the variety of test equipment 25 and the respective communication interface equipment (e.g. the communication server 55, Ethernet box 70, etc.). Each type of test and communication equipment may expect a different protocol, command, syntax, line rate, etc depending upon the equipment brand, model, release, etc. One of the key advantages of the inventive system is the ability to easily communicate with any such equipment and the database 400 facilitates such communication by providing the appropriate protocols, syntax, commands, etc for the particular type of equipment being utilized (**Floyd** Paragraph 0143). A further mapping between the generic command 542 and command type 544 may also be used to provide an additional level of granularity to the command string sent to the equipment by the AMS controller 100. Thus, a generic script for conducting the stress testing processes that uses generic commands may be translated into equipment-specific command strings thereby greatly simplifying and streamlining the command process (**Floyd** Paragraph 0147).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Floyd's** teaching would have allowed **Chacon** to provide a corresponding gross reduction in chamber throughput and efficiency and to permit asynchronous loading and test starting of an arbitrary number of modules.

With respect to claim 54, **Chacon** teaches **"the method of claim 1, wherein: storing a second attribute data record includes storing second values of the first field, second field, third field and one or more subordinate fields that enable the diagnostic apparatus to communicate with a second class of equipment via a digital interface"** as (**Chacon** Figure 7).

Chacon teaches the elements of claim 54 as noted above but does not explicitly disclose **"storing a first attribute data record includes storing first values of the first field, second field, third field and one or more subordinate fields that enable the diagnostic apparatus to communicate with a first class of equipment via an analog interface."**

However, **Floyd** discloses **"storing a first attribute data record includes storing first values of the first field, second field, third field and one or more subordinate fields that enable the diagnostic apparatus to communicate with a first class of equipment via an analog interface"** as (**Floyd** figure 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Floyd's** teaching would

have allowed **Chacon** to provide a corresponding gross reduction in chamber throughput and efficiency and to permit asynchronous loading and test starting of an arbitrary number of modules.

3. Claims 6, and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Guillermo Rudolfo Chacon** (U.S. Patent No. 6,128,588) in view of **Floyd et al.** (U.S. PG Pub No 2002/0105355) as applied to claims 1, 4-5, 15, 44, 46-50 and 53-54 above, in view of **Robert C. Beauchesne** (**Beauchesne** hereinafter) (U.S. Patent No 5,777,876).

With respect to claim 6, **Chacon** teaches **"the method of claim 1, wherein, for each attribute data record, the first field identifies at least one model of equipment"** as an equipment parameter such as equipment brand name, model etc (**Chacon** Col 2, Lines 27-29). Scheduler database 30 stores production models for simulation as well as data extracted from the manufacturing execution system 20 to be used for the simulation (**Chacon** Col 2, Lines 66-67 & Col 3, Lines 1-2).

Chacon teaches the elements of claim 6 as noted above but does not explicitly teaches **"a version of an equipment."**

However, **Beauchesne** teaches **"a version of an equipment"** as the product main fields also includes a 4 digit product version field for storing information coded value specifying the manufacturing version of the board indicating the particular assembly line (equipment complement) on which the board will be manufactured (e.g. A, B) (**Beauchesne** Col 5, Lines 62-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Beauchesne's** teaching would have allowed **Chacon and Floyd** to manage and control process information pertaining to a variety of different equipments manufactured on a number of different manufacturing lines (**Beauchesne** Col 1, Lines 66-67 & Col 2, Lies 1-2) by having different versions of an equipment.

With respect to claim 8, **Chacon** teaches, **"storing a first subordinate field that identifies a model of equipment"** as an equipment parameter such as equipment brand name, model etc (**Chacon** Col 2, Lines 27-29). Scheduler database 30 stores production models for simulation as well as data extracted from the manufacturing execution system 20 to be used for the simulation (**Chacon** Col 2, Lines 66-67 & Col 3, Lines 1-2).

Chacon discloses the elements of claim 8 as noted above but does not explicitly teach the step of **"storing a second subordinate field that identifies a version of the model of equipment identified in the first subordinate field."**

However, **Beauchesne** discloses **"storing a second subordinate field that identifies a version of the model of equipment identified in the first subordinate field"** as The product main fields also includes a 4 digit product version field for storing information coded value specifying the manufacturing version of the board indicating the particular assembly line (equipment complement) on which the board will be manufactured (e.g. A, B). A Generic name field is used for storing information which may describe the product in generic terms and this is especially useful in situations where a particular product is associated with a specific

model or feature name: Taurus, Legend, etc (**Beauchesne** Col 5, Lines 1-67 & Col 6, Lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Beauchesne's** teaching would have allowed **Chacon and Floyd** to manage and control process information pertaining to a variety of different equipments manufactured on a number of different manufacturing lines (**Beauchesne** Col 1, Lines 66-67 & Col 2, Lies 1-2) by having different versions of an equipment.

With respect to claim 9, **Chacon and Floyd** do not explicitly teach **the method of claim 1, wherein, for at least one attribute data record, the step of storing the first field includes: "storing first and second subordinate fields that collectively identify at least one of a range of versions of an equipment model and a range of revision dates of the equipment model."**

However, **Beauchesne** discloses **"storing first and second subordinate fields that collectively identify at least one of a range of versions of an equipment model and a range of revision dates of the equipment model"** as other fields include a 10 digit current revision field, a 10 digit previous revision field, a 40 digit comment text field, a 8 digit source locating field and a 12 digit file data field. The revision field is used for storing a coded value designating the most recent revision made to any of the steps associated with the product. The previous revision field is used for storing a coded value designating the previous change

(**Beauchesne** Col 6, Lines 12-19). Different revisions give different versions. Therefore the range of revisions gives us the range of versions.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Beauchesne's** teaching would have allowed **Chacon and Floyd** to manage and control process information pertaining to a variety of different equipments manufactured on a number of different manufacturing lines (**Beauchesne** Col 1, Lines 66-67 & Col 2, Lies 1-2) by having different versions of an equipment.

4. Claims 17-18, 21, 25-26, 36, 45 and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Guillermo Rudolfo Chacon** (U.S. Patent No. 6,128,588) in view of **Floyd et al.** (U.S. PG Pub No 2002/0105355) as applied to claims 1, 4-5, 15, 21, 25-26, 36, 44, 46-50 and 53-54 above, in view of **Martorana et al.** (**Martorana** hereinafter) (U.S. PG Pub No. 2003/0236628).

With respect to claim 17, **Chacon** teaches **a method of storing information in a database to characterize attributes outputted by different classes of equipment, comprising the steps of:**

"providing a database memory device" as auto scheduling system 22 includes scheduler database 30 (**Chacon** Col 2, Lines 64-65).

"storing in the database memory device a plurality of attribute data records, wherein the step of storing each attribute data record includes" as scheduler database 30 stores production models for simulation as well as data extracted from the manufacturing execution system 20 to be used for the simulation. The stored information includes T1 and T2 parameters, lot status, machine tact (time standard), and Kanban worksheets (**Chacon** Col 2, Lines 66-67 & Col 3, Lines 1-4).

"storing in that record a first field identifying a class of equipment" as there may be a number of different algorithms in use depending on the type of equipment (**Chacon** Col 39, Lines 46-48 & fig 5). The correct set of formulae to be applied to a given row on the tact table will be found by looking up the tact formula field in the corresponding stnfamdef record (**Chacon** Col 39, Lines 52-55). The table in Col 43, & Lines 15-25 teach that stnfamdef is equipment type record.

"storing in that record a second field identifying an attribute whose value is outputted by the class of equipment identified by the first field of that record" as according to the present invention, a method and system for creating customized machine tact information includes defining time standards as a function of process parameter and equipment parameters. For example, if a process parameter such as temperature, pressure, etc. and an equipment parameter such as equipment brand name, model, etc (**Chacon** Col 2, Lines 24-29). The machine tact information is created by accessing and using the stnfamdef table, which contain equipment type records defines/outputs the attributes/parameters.

Chacon discloses the elements of claim 17 as noted above but does not explicitly teach the step of **"storing in that record a third field specifying a conversion parameter that**

defines a conversion of the value of the attribute identified in the second field into physical units of measurement" "an attribute whose value is outputted by the class of equipment identified by the first field of that record" and "define communications interface specifications that enable a diagnostic apparatus to retrieve distinct attribute information from distinct classes of equipment."

However, **Floyd** teaches **"an attribute whose value is outputted by the class of equipment identified by the first field of that record"** as a test signal is split and supplied to multiple modules. Passive testing may be performed by monitoring parameters of the module while the test signal is supplied to the module. Active testing may be a functional test of the module in which the test signal is supplied to, processed by, and output from the module. Such test signals output from the modules are switched to the test equipment on a time-share basis. In this way, the number or expensive test equipment set-ups may reduced. The controller for each virtual oven also generates displays so that a user can track the test progress of all modules within the virtual oven. The controller also builds a database of the active and passive tests for each module (**Floyd** Abstract).

"define communications interface specifications that enable a diagnostic apparatus to retrieve distinct attribute information from distinct classes of equipment" as the equipment command & communication table 500 permits the AMS controller 100 to send commands to, receive data from and otherwise communicate with various different types of test and communication equipment including the variety of test equipment 25 and the respective communication interface equipment (e.g. the communication server 55, Ethernet box 70, etc.). Each type of test and communication equipment may expect a different protocol,

command, syntax, line rate, etc depending upon the equipment brand, model, release, etc. One of the key advantages of the inventive system is the ability to easily communicate with any such equipment and the database 400 facilitates such communication by providing the appropriate protocols, syntax, commands, etc for the particular type of equipment being utilized (**Floyd** Paragraph 0143).

Further, **Floyd** teaches **"the three fields"** as the equipment table 520 may include the following information items or field: equipment brand identifier, equipment brand name, equipment type identifier, equipment type description and other information items that are used to uniquely identify each piece of test and communication equipment (**Floyd** Paragraph 0144).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Floyd's** teaching would have allowed **Chacon** to provide a corresponding gross reduction in chamber throughput and efficiency and to permit asynchronous loading and test starting of an arbitrary number of modules.

Chacon and Floyd teach the elements of claim 17 but do not explicitly teach **"storing in that record a third field specifying a conversion parameter that defines a conversion of the value of the attribute identified in the second field into physical units of measurement."**

However, **Martorana** discloses **"storing in that record a third field specifying a conversion parameter that defines a conversion of the value of the attribute identified in the second field into physical units of measurement"** as a system includes a thermal

isolating chamber, an inertial measurement unit for making inertial measurements, and a temperature control system (**Martorana** paragraph 0014).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Mortorana's** teaching would have allowed **Chacon and Floyd** to effectively control the temperature of an inertial measurement unit within an isolating chamber (**Martorana** paragraph 0008) by identifying the units of measurement for the attribute such as temperature.

Claim 45 is essentially the same as claim 17 except it sets forth the claimed invention as a data storage medium and is rejected for the same reasons as applied hereinabove.

Claim 21 is essentially the same as claims 1 and 17 except it sets forth the claimed invention as an apparatus, and is rejected for the same reasons as applied hereinabove.

With respect to claim 18, **Chacon and Floyd** do not explicitly teach **"the method of claim 17, wherein, for at least one of the attribute data records, the conversion parameter stored in the third field specifies at least one of a physical unit of measurement, a scale factor, and a range of physical values."**

However, **Martorana** discloses **"the method of claim 17, wherein, for at least one of the attribute data records, the conversion parameter stored in the third field specifies at least one of a physical unit of measurement, a scale factor, and a range of physical**

values" as a system includes a thermal isolating chamber, an inertial measurement unit for making inertial measurements, and a temperature control system (**Martorana** paragraph 0014).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Mortorana's** teaching would have allowed **Chacon and Floyd** to effectively control the temperature of an inertial measurement unit within an isolating chamber (**Martorana** paragraph 0008) by identifying the units of measurement for the attribute such as temperature.

Claim 52 is essentially the same as claim 18 except it sets forth the claimed invention as a computer readable medium and is rejected for the same reasons as applied hereinabove.

Claim 25 is same as claim 4 except that it sets forth the claimed invention as an apparatus and is rejected for the same reasons as applied hereinabove.

Claim 26 is essentially the same as claim 5 except it sets forth the claimed invention as an apparatus and is rejected for the same reasons as applied hereinabove.

Claim 36 is essentially the same as claim 15 except it sets forth the claimed invention as an apparatus and is rejected for the same reasons as applied hereinabove.

With respect to claim 51, **Chacon and Floyd** do not explicitly teach **"wherein the one or more subordinates fields includes at least one of an attribute name field, an attribute**

chamber model field, a read/write field, a unit conversion field, a minimum scale factor conversion field and a maximum scale factor conversion field."

However, **Martorana** discloses **"wherein the one or more subordinates fields includes at least one of an attribute name field, an attribute chamber model field, a read/write field, a unit conversion field, a minimum scale factor conversion field and a maximum scale factor conversion field"** as a system includes a thermal isolating chamber, an inertial measurement unit for making inertial measurements, and a temperature control system (**Martorana** paragraph 0014, 0042).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Mortorana's** teaching would have allowed **Chacon and Floyd** to effectively control the temperature of an inertial measurement unit within an isolating chamber (**Martorana** paragraph 0008) by identifying the units of measurement for the attribute such as temperature.

5. Claims 27, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Guillermo Rudolfo Chacon** (U.S. Patent No. 6,128,588) in view of **Floyd et al.** (U.S. PG Pub No 2002/0105355) further in view of **Martorana et al. (Martorana** hereinafter) (U.S. PG Pub No. 2003/0236628) as applied to claims 17-18, 21, 25-26, 36, 45 and 51-52 above, further in view of **Robert C. Beauchesne (Beauchesne** hereinafter) (U.S. Patent No 5,777,876).

Claim 27 is essentially the same as claim 6 except it sets forth the claimed invention as an apparatus and is rejected for the same reasons as applied hereinabove.

Claim 29 is essentially the same as claim 8 except it sets forth the claimed invention as an apparatus and is rejected for the same reasons as applied hereinabove.

Claim 30 is essentially the same as claim 9 except it sets forth the claimed invention as an apparatus and is rejected for the same reasons as applied hereinabove.

Response to Arguments

6. Applicant's arguments filed 9/30/2008 have been fully considered but they are not persuasive.

Applicant argues that Chacon and Floyd do not teach or suggest **"wherein at least one class of equipment is manufacturing equipment having a plurality of signal lines for outputting attribute data" and "wherein the ID identifies a first one of the plurality of signal lines."**

In response to the preceding arguments examiner respectfully submits that Floyd teaches **"wherein at least one class of equipment is manufacturing equipment having a plurality of signal lines for outputting attribute data" and "wherein the ID identifies a first one of the plurality of signal lines"** as (**Floyd** Paragraph 0145, 0148, 0090 and Abstract and figures 4-5).

These figures show the equipments 25 connected to general purpose interface bus GPIB. This GPIB has plurality of signal lines to route test signals, commands and measurements. These test signals and commands also includes equipment brand and

type ID's. Therefore, plurality of signal lines of GPIB are being used to transmit data from the equipment.

Applicant further argues that Chacon Floyd and Martorana do not teach **"a third field specifying a conversion parameter that defines a conversion of the value of the attribute identified in the second field into physical units of measurement."**

In response to the preceding arguments examiner respectfully submits that Floyd teaches storing of physical values/units of measurement as a test signal is split and supplied to multiple modules. Passive testing may be performed by monitoring parameters of the module while the test signal is supplied to the module. Active testing may be a functional test of the module in which the test signal is supplied to, processed by, and output from the module. Such test signals output from the modules are switched to the test equipment on a time-share basis. In this way, the number or expensive test equipment set-ups may reduced. The controller for each virtual oven also generates displays so that a user can track the test progress of all modules within the virtual oven. The controller also builds a database of the active and passive tests for each module (**Floyd** Abstract). Therefore these lines teach the storage of physical measurement values in a database. These test measurement values include things such as temperature, current, voltage and other parameters.

Further Martorana teaches a system includes a thermal isolating chamber, an inertial measurement unit for making inertial measurements, and a temperature control

system (**Martorana** paragraph 0014). Mortarana's invention provide physical units of measurements for temperature, pressure etc for an equipment.

The physical measurements of Martorana combined with the measurement values stored in the database as taught by Floyd teach the argued limitation as a whole.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usmaan Saeed whose telephone number is (571)272-4046. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571)272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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US
December 4, 2008

/Hosain T Alam/

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